THE OPERATING SYSTEM
FOR THE CLOUD

ECE 530 Cloud Computing

OpenStack Services

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Compute: Nova

- On-demand networked *virtual machines*
- KVM and Xen are available choices for hypervisor technology or Linux container like Docker

Instances

Filter | Filter | + Launch Instance | Soft Reboot Instances | Terminate Ins

Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
test1	Ubuntu 14.04 amd64	192.168.1.3	m1.small | 2GB RAM | 1 VCPU | 20.0GB Disk	-	Active	nova	None	Running	0 minutes	Create Snapshot | More

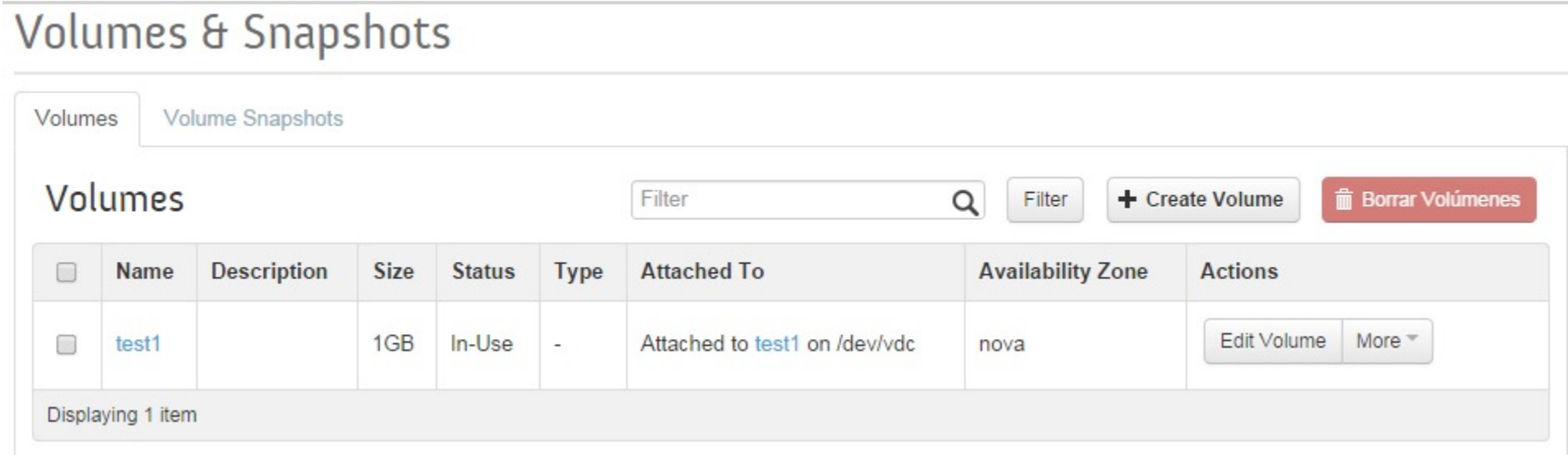
Displaying 1 item

Network: Neutron

- allowing users to create their own networks and then attach interfaces to them
- highly configurable due to it's plug-in architecture
- legacy networking: nova-network
  - Simplicity
  - Lack functionality (VPN, load balancing, firewall)

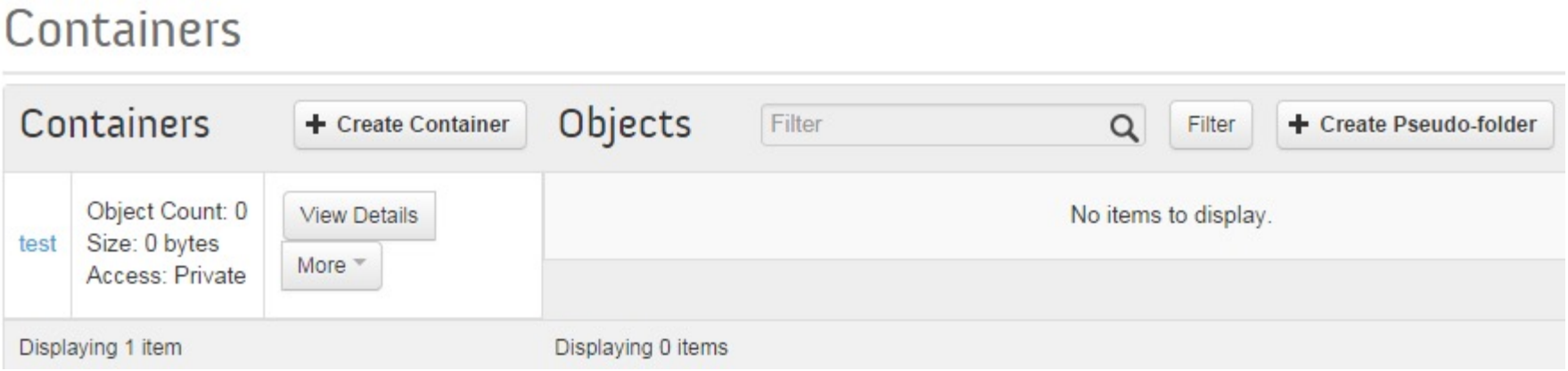
Block Storage: Cinder

- Provides persistent block-level storage devices for use with OpenStack compute instances
- Manages the creation, attaching and detaching of the block devices to servers.



Object Storage: Swift

- It accepts files to upload, modifications to metadata or container creation.
- The swift architecture is very distributed to prevent any single point of failure as well as to scale horizontally



Identity: keystone

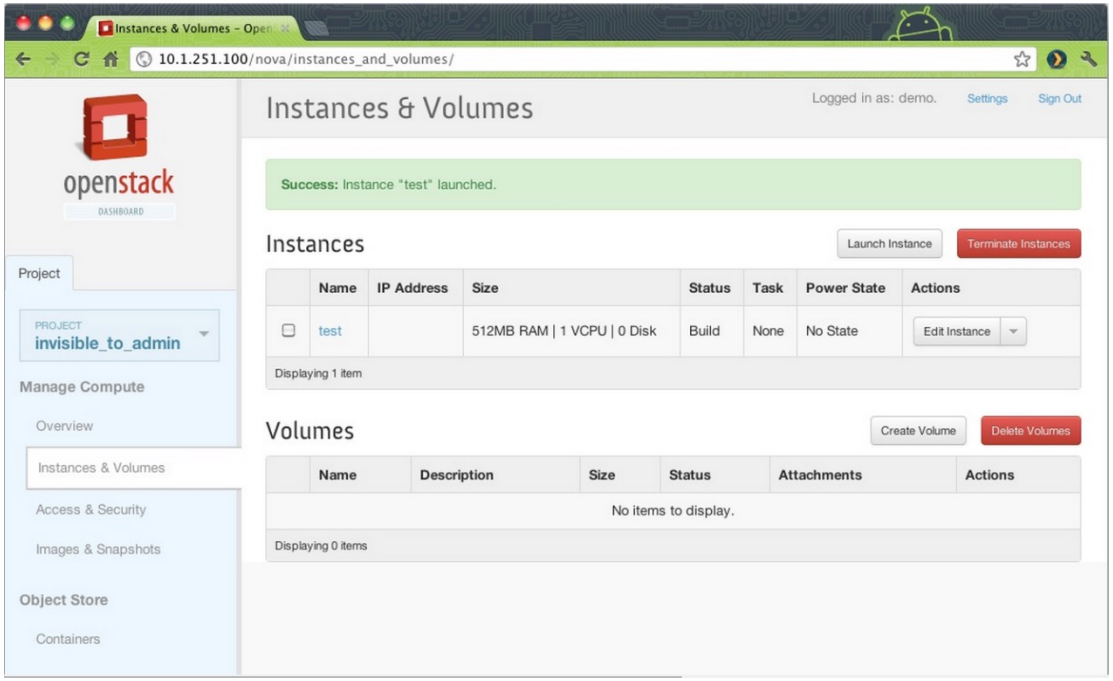
- provides a single point of integration for OpenStack policy, catalog, token and authentication.
- supports multiple forms of authentication including standard username and password credentials, token-based systems and AWS-style
- **User**. **Tenant**. **Role**.

Image Store: Glance

- provides discovery, registration, and delivery services for disk and server images.
- It can also be used to store and catalog an unlimited number of backups.

Dashboard: Horizon

- provides administrators and users a graphical interface to access, provision, and automate cloud-based resources.



Compare to AWS

- Core Services

Service	OpenStack	AWS
Compute	Nova	EC2
Network	Neutron	VPC
Block Storage	Cinder	EBS
Object Storage	Swift	S3
Image management	Glance	AMI
Dashboard	Horizon	Console
Identity	Keystone	IAM

Homework: Install OpenStack

- Hardware Planning (Multi-node)

Node	Hardware Requirement
Controller	1 core, 1G mem, 10G
Compute	2+ cores, 3G+ mem, 20G
Block Storage	1 core, 1G mem, “cinder-volume” logical volume group

- Network Planning
  - Nova-network: 2 subnets
  - Neutron: 3 subnets

How to troubleshoot

- LOG file
  - Enable verbose output in conf
  - Locate in /var/log/*projectcode*
- ask.openstack.org
- Google
- Delete VM and reinstall.
  - Use snapshot (Vmware) to save VM state.